

WHAT IS CLAIMED IS:

1. A reflector comprising a substrate having a plurality of light-reflective concave portions on a surface thereof, each concave portion having a first vertical section and a second vertical section which pass through a deepest point of the concave portion,

wherein the first vertical section has an internal shape defined by a first curve and a second curve, the first curve extending from a first point on a peripheral edge of the concave portion to the deepest point of the concave portion, and the second curve extending continuously from the first curve and from the deepest point of the concave portion to a second point on the peripheral edge of the concave portion, and a first average of an absolute value of an inclination angle of the first curve relative to the substrate surface is larger than a second average of an absolute value of an inclination angle of the second curve relative to the substrate surface, and

wherein the second vertical section is perpendicular to the first vertical section and has an internal shape defined by a shallow curve and deep curves formed at both sides of the shallow curve, the deep curves having a smaller radius of curvature compared with the shallow curve.

2. A reflector according to Claim 1, wherein the concave portions are formed such that the first vertical

sections and the second vertical sections of each concave portion are aligned in the same direction and orientations of the first curves in each concave portion are the same.

3. A reflector according to Claim 1, wherein the inclination angle of the first curve relative to the substrate surface and the inclination angle of the second curve relative to the substrate surface are substantially zero at the point at which the first curve and the second curve are connected to each other.

4. A reflector according to Claim 1, wherein the concave portions are irregularly formed such that the depth thereof varies in a range of about 0.1  $\mu\text{m}$  to 3  $\mu\text{m}$ .

5. A reflector according to Claim 1, wherein the concave portions are irregularly arranged next to each other.

6. A reflective liquid crystal display comprising a reflector according to Claim 1.

7. A liquid crystal display according to Claim 6, wherein the concave portions are formed such that the first vertical sections and the second vertical sections of each concave portion are aligned in the same direction and orientations of the first curves in each concave portion are the same, and the reflector is installed such that the first

curves are disposed above the second curves in each concave portion when viewed by an observer.

8. A reflector according to Claim 1, wherein the deep curves are formed symmetrically across the shallow curve.

9. A reflector according to Claim 1, wherein the deepest points and central points of the concave portions are not vertically aligned.

10. A reflector according to Claim 1, wherein the first average varies from about  $2^{\circ}$  to  $90^{\circ}$ .

11. A reflector according to Claim 1, wherein the second average varies from about  $1^{\circ}$  to  $89^{\circ}$ .

12. A reflector according to Claim 1, wherein an absolute value of an inclination angle of the shallow curve relative to the substrate surface is at most about  $10^{\circ}$ .

13. A reflector according to Claim 1, wherein an absolute value of an inclination angle of the deep curve relative to the substrate surface is about  $2^{\circ}$  to  $90^{\circ}$ .

14. A reflector in which peak reflectance is obtained at about a specular reflection angle and a first integrated value of reflectance in a reflection-angle range smaller

than the specular reflection angle with respect to a substrate surface is different from a second integrated value of reflectance in a reflection-angle range larger than the specular reflection angle.

15. A reflective liquid crystal display comprising a reflector according to Claim 14, wherein the reflector is installed such that the reflection-angle range corresponding to the larger of the integrated values of reflectance is disposed at an upper side of the specular reflection angle with respect to the substrate surface when viewed by an observer.

16. A reflector according to Claim 14, wherein a secondary peak in reflectance is formed in the reflection-angle range smaller than the specular reflection angle.

17. A reflector according to Claim 16, wherein the secondary peak is disposed at an angle between normal to the substrate surface and about  $20^\circ$  from normal to the substrate surface.

18. A reflector according to Claim 14, wherein the first integrated value of reflectance is larger than the second integrated value of reflectance.

19. A reflector comprising a substrate having a

plurality of light-reflective concave portions on a surface thereof and a peak reflectance at about a specular reflection angle and a first integrated value of reflectance in a first reflection-angle range smaller than the specular reflection angle with respect to a substrate surface is larger than a second integrated value of reflectance in a second reflection-angle range larger than the specular reflection angle, the concave portions having a first vertical section including a first curve and a second curve, and a second vertical section,

wherein the first curve extends from a first point on a peripheral edge of one of the concave portions to a deepest point of the one of the concave portions and the second curve extends from the first curve and from the deepest point of the one of the concave portions to a second point on the peripheral edge of the one of the concave portions, and

wherein a first average of an absolute value of an inclination angle of the first curve relative to the substrate surface is larger than a second average of an absolute value of an inclination angle of the second curve relative to the substrate surface.

20. A reflector according to Claim 19, wherein the second vertical section of the one of the concave portions is perpendicular to the first vertical section of the one of the concave portions and includes a shallow curve and deep

curves formed at both sides of the shallow curve, the deep curves having a smaller radius of curvature than the shallow curve.

21. A reflective liquid crystal display comprising a reflector according to Claim 20, wherein the reflector is installed such that the first reflection-angle range is disposed at an upper side of the specular reflection angle with respect to the substrate surface when viewed by an observer.

22. A reflector according to Claim 20, wherein a secondary peak in reflectance is formed in the first reflection-angle range.

23. A reflector according to Claim 22, wherein the secondary peak is disposed at an angle between normal to the substrate surface and about  $20^{\circ}$  from normal to the substrate surface.

24. A reflector according to Claim 20, wherein the first vertical sections and the second vertical sections of the concave portions are aligned in the same direction and orientations of the first curves in the concave portions are the same.

25. A reflective liquid crystal display comprising a

reflector according to Claim 20.

26. A liquid crystal display according to Claim 25, wherein the first vertical sections and the second vertical sections of the concave portions are aligned in the same direction and orientations of the first curves in the concave portions are the same, and the reflector is installed such that the first curves are disposed above the second curves in each concave portion when viewed by an observer.

27. A reflector according to Claim 20, wherein an absolute value of an inclination angle of the shallow curve relative to the substrate surface is at most about  $10^{\circ}$ .